

CLAIMS

1. An engine shutdown device for controlling a fuel shut-off valve to thereby selectively interrupt fuel flow to an engine, said device comprising:

a normal switch connected to said fuel shut-off valve and configured to respond to at least one of a normal shutdown signal and an emergency shutdown signal;

an emergency switch connected to said fuel shut-off valve and configured to respond to said emergency shutdown signal having transient characteristics;

wherein, upon receipt of said emergency shutdown signal, said emergency switch sends an emergency interruption signal to said valve and said normal switch send a normal interruption signal to said valve to thereby interrupt said fuel flow; and

said normal interruption signal having a given normal value, and said emergency interruption signal having a peak value substantially larger than said given normal value, whereby said fuel flow interrupting occurs faster in response to said emergency shutdown signal than in response to said normal shutdown signal.

2. The device of claim 1, further comprising a manual switch connected to said fuel shut-off valve for selectively interrupting said fuel flow in response to a manual shutdown signal being independent of

said normal shutdown signal and said emergency shutdown signal.

3. The device of claim 1, wherein said normal switch and said emergency switch each comprise a transistor and said given normal value and said peak value comprise voltage values.
4. The device of claim 1, further comprising a safety switch connected to said fuel shut-off valve and configured to respond to at least one of a second normal shutdown signal, and a second emergency shutdown signal, said second normal and emergency shutdown signals provided from a source which is different from a source for said normal and emergency shutdown signals.
5. A gas turbine engine comprising an engine shutdown device for controlling a fuel shut-off valve to thereby selectively interrupt fuel flow to said engine, said device comprising:

a normal switch connected to said fuel shut-off valve and configured to respond to at least one of a normal shutdown signal and an emergency shutdown signal;

an emergency switch connected to said fuel shut-off valve and configured to respond to said emergency shutdown signal having transient characteristics;

wherein, upon receipt of said emergency shutdown signal, said emergency switch sends an emergency interruption signal and said normal switch sends a

normal interruption signal to said valve to thereby interrupt said fuel flow; and

    said normal interruption signal having a given normal value and said emergency interruption signal having a peak value substantially larger than said given normal value, whereby said fuel flow interrupting occurs faster in response to said emergency shutdown signal than in response to said normal shutdown signal.

6. The gas turbine engine of claim 5, further comprising a manual switch connected to said fuel shut-off valve for selectively interrupting said fuel flow in response to a manual shutdown signal being independent of said normal shutdown signal and said emergency shutdown signal.
7. The gas turbine engine of claim 5, wherein said normal switch and said emergency switch each comprise a transistor and said given normal value and said peak value comprise voltage values.
8. The gas turbine engine of claim 5, further comprising a safety switch connected to said fuel shut-off valve and configured to respond to at least one of a second normal shutdown signal, and a second emergency shutdown signal, said second normal and emergency shutdown signals provided from a source which is different from a source for said normal and emergency shutdown signals.
9. A method for selectively interrupting fuel flow to an engine, said method comprising:

in a normal mode, enabling a normal interruption signal for interrupting said fuel flow in response to a normal shutdown signal;

in an emergency mode, enabling an emergency interruption signal and said normal interruption signal for interrupting said fuel flow in response to at least one of said normal shutdown signal and an emergency shutdown signal transient characteristics;

said normal interruption signal having a given normal value and said emergency interruption signal having a peak value substantially larger than said given normal value, whereby said fuel flow interrupting occurs faster in response to said emergency shutdown signal than in response to said normal shutdown signal.

10. The method of claim 9, further comprising, in a manual mode, selectively interrupting said fuel flow independently of said normal shutdown signal and said emergency shutdown signal.
11. The method of claim 9, further comprising, in a dual channel mode, interrupting said fuel flow only when at least of a second normal shutdown signal and a second emergency shutdown signal are substantially equal to said normal and emergency shutdown signals, said second normal and emergency shutdown signals being provided from a source which is different from a source for said normal and emergency shutdown signals.